4U-profile, 24-bay
FC-2G to SATA-II RAID Subsystem

# EonStor® A24F-G2224

The A24F-G2224 subsystem comes with two (2) 2Gb per second (Gbps) Fibre channels interfaced through eight (8) SFP ports on two (2) independent I/O modules with embedded bypass. The subsystem's 4U-profile, rack-mountable chassis houses RAID controller featuring complete RAID protection and data integrity functionality. All major components are hot-replaceable, including its Li-ION battery, host I/O modules, and the RAID-protected disk drives.

The subsystem provides high-density array capacity with twenty-four (24) drive bays for SATA-II disk drives, facilitates large I/O transfer over its dual PCI-X bus architecture, and transmits block I/Os over flexible caching and the dedicated RAID 6 engine. The A24F combines the capabilities and block-level performance of RAID storage with reliable Fibre Channel connectivity.

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HIGHLIGHTS

# Reliable Storage Networking Solution Provider

Based on a proven architecture designed for continuous operation with heavy access loads, the EonStor A24F-G2224 is ideal for environments from SAN-attached storage to performance-intensive applications operating within an open-system and multi-path framework.

This SAN-ready subsystem meets the demands for enterprise-class storage in terms of its reliable firmware, ease of management, fault-proof hardware, and on-the-fly scalability.

## Highlights

- Two (2) 2Gbps, bypass-embedded Fibre host channels
- Separate I/O board
- Max.8 host connection
- Supports 3Gbps SATA-II disk drives; backward compatible with SATA-I disk drives
- End-to-end performance up to 385MBps for Sequential Reads and 315MBps for Sequential Writes in a RAID5 array
- Supports up to 2GB DDR RAM
- Supports RAID level 6
- Modular, passive backplane in a high-availability architecture
- Highest density 4U chassis providing up to 12TB of storage capacity
- Optional hot-swappable battery backup units (BBUs)
- Dual-speed cooling fans to reduce system noise and power consumption
- Ease of management through an LCD keypad panel, RS-232C terminal, or an Ethernet link (TCP/IP) to a PC running Java-based RAIDWatch® Manager
- Real-time event notification by various methods

## Reliability

In addition to RAID protection against drive failure, the subsystem has ingenious means to deal with other challenges that may jeopardize data integrity. For example, hard disks wear down over time and drives may arrive from the manufacturer with inherent defects. Media Scan and Task Scheduler are among the DrvSmart utilities designed to detect and mend these problems.

The subsystem is also equipped with error containment algorithms, known as the SysSmart functions. If a critical component fails, e.g., a cooling module, the subsystem automatically disables write-back caching and assumes the conservative write-through mode. If the fault condition persists for an extended period of time, the subsystem enters an idle state. All of these precautions help ensure safe operation and data integrity.

## Availability

The EonStor A24F is powered by field-proven technologies that ensure data protection and performance to meet various storage needs. Data is secured by sophisticated components and advanced firmware developed through a decade of experience in RAID technology. In addition to the choice of RAID levels, 0, 1(0+1), 3, 5, 6, 10, 30, 50 and 60, the subsystem protects your data with various high-availability algorithms ranging from predictive checking and self-healing rebuilds to system self-diagnostics.

To ensure a high level of availability, critical components such as disk drives, power supplies, and cooling fans are all redundant and hot-swappable. Modules are integrated with the passive backplane via board-to-board connectors to eliminate points of failure. Assisted by GUI management software, system administrators can constantly monitor the operating status of all components through a console locally or remotely situated. The subsystem guarantees data integrity with selected, high MTBF components; a modular, fault-tolerant design; and a complete set of environmental monitoring and fault protection capabilities built in the firmware.

## Serviceability

All critical modules are housed in separate, easily retrievable canisters. In the event of component failure, a hard disk drive, power supply, battery module, or cooling fan can be replaced within seconds. The modules are closely monitored using self-diagnostic features and the help of runtime utilities such as RAIDWatch. Spring screws, securing latches, and key-locks all provide easier access to the modules.

A variety of configuration and monitoring methods are available, either locally via the LCD keypad panel and the text-mode RS-232C terminal, or remotely through the Java-based GUI manager. All faulty conditions, including RAID configuration events, module failure, voltage and temperature readings, are instantly reported. A system administrator can select from the following notification methods to receive reports when away from the installation site: LAN broadcast, SNMP traps, email, fax, SMS, ICQ, and MSN Messenger. Even the notification utility can be installed redundantly on two different machines to avoid the chance of blind time.

# SPECIFICATIONS

## Reliable Storage Networking Solution Provider

### Infortrend Smart Technologies

Derived from more than ten years of experience in RAID storage design, Infortrend's firmware features extremely compact protocol and rich varieties of algorithms to deal with the stringent requirements of storage applications. The technologies enhance I/O processing, drive handling, and system management.

### IOSmart

The IOSmart technologies consist of specific functions and configuration options that control various I/O characteristics in order to meet the rapidly increasing requirements of today's applications. These functions include adaptable stripe size; write policy; optimizations modes; Guaranteed Latency I/O; and automatically adjusted, multi-threaded, predictive read-ahead, sorted, or group writes.

### DrvSmart

DrvSmart is comprised of fault-preventive algorithms that ensure data integrity when hard drive imperfections occur. These mechanisms correct minor defects, increase reaction time, allow more time to prepare a rebuild, and help minimize performance impact. DrvSmart functions include Media Scan and Task Scheduler, hot-spare, drive roaming, SMART and manual cloning options, and more.

### SysSmart

SysSmart combines enclosure monitoring and firmware management capabilities designed to minimize the chance of downtime caused by hardware failures. With SysSmart, Infortrend's subsystems are smartly managed and guarded against extreme operating conditions.

SysSmart functions include the event-triggered, adaptive write policy, auto-shutdown, dual-speed fan control, and the various monitoring utilities and approaches included in the powerful RAIDWatch Manager software.

## Specifications

**Subsystem Characteristics**

- 600MHz RISC CPU, 512KB L2 cache
- ASIC266 RAID engine
- DDR cache memory 512MB
- BBUs per controller(optional) 1
- LCD keypad panel
- Serial COM ports per controller 2
- Ethernet ports per controller 1
- Diagnostic LEDs on all FRUs

**Drive Interface**

- Number of disk trays 24
- Serial ATA II/I drive support

**Host Interface**

- 2Gbps SFP ports 8
- Single channel bandwidth 200MBps
- Tag command queuing
- Multiple target IDs

**RAID Configurations**

- RAID levels 0, 1(0+1), 3, 5, 6, 10, 30, 50, 60, JBOD
- Max. 32 logical drives
- Max. 1024 LUNs
- Multiple array configurations
- Automatic background rebuild
- Intelligent drive handling

**High Availability**

- Redundant, and hot-swappable FRUs
- System self-diagnostics
- Dedicated and Global hot spare
- Li-ION battery backup module
- UPS support

**Management Software**

- RAIDWatch Manager software
- Terminal via RS-232C
- Telnet over Ethernet
- LCD keypad panel
- Event notification methods:
  - Email
  - Fax
  - LAN broadcast
  - SNMP traps
  - Cell phone message SMS
  - Instant messages MSN/ICQ

**OS Support**

- Microsoft Windows NT
- Microsoft Windows 2000 Server
- Microsoft Windows 2003 Server
- Sun Solaris ver. 8/9
- Red Hat Linux ver. 8/9, Enterprise ver. 3
- SUSE Linux ver. 8/9

**Requirements**

- Input Voltage:
  90AC at 8A; 264VAC at 4A with PFC (auto-switching)
- DC Output:
  12V-24A; 5V-36A; 3.3V-20A
- Relative Humidity:
  5% to 95% non-condensing
- Operating Temperature:
  0°C to 40°C

**Dimensions**

- 4U, 19-inch rackmount chassis
- Chassis with handles:
  447(W) x 174.4(H) x 514(D) mm
  (17.6 x 6.86 x 20.2 inches)
- Chassis without handles:
  482(W) x 174.4(H) x 498(D) mm
  (18.9 x 6.86 x 19.6 inches)

# Spare Parts & Accessories

## Reliable Storage Networking Solution Provider

## Major Markets and Uses

Infortrend products are used in disk-to-disk backup, server-attached and network data storage and in major industries such as medical imaging, security/CCTV, and digital media including video-on-demand, stream editing and more.

## Spare Parts

| Description | Part Number |
|---|---|
| Fibre-to-SATA RAID controller module, for ES A24F-G2224 subsystems, no FC-2G SFP host connectors, RAID 6 | IFT-84AF22RD24E |
| Drive tray, Type-III bezel w/maize color push button and Type-II LED lightpipe. | IFT-9274CDTray |
| Drive tray, Type-III bezel and Type-II LED lightpipe, 2-to-1 SATA (SATA II) MUX conversion, power MOS switch embedded | IFT-9274A2DT2S1S |
| HDD 2-to-1 SATA (SATA II) MUX conversion, SCA-II-to-SATA, power MOS switch embedded, single-controller subsystems | IFT-9274A2N2S1S |
| Power supply module, ES 4U/24-bay subsystems, 405W (N+1) capacity | IFT-9274CPSU |
| Dual-fan cooling module in a hot-swappable canister | IFT-9274CFanMod |
| Fibre Channel (FC-2G) I/O board, left-hand side, for ES 4U/24-bay subsystems, 4 x SFP ports w/ onboard host hub | IFT-9274CF2HIO4L |
| Fibre Channel (FC-2G) I/O board, right-hand side, for ES 4U/24-bay subsystems, 4 x SFP ports w/ onboard host hub | IFT-9274CF2HIO4R |
| Left-side forearm handle with an LCD panel | IFT-9274HandLLCD |
| Right-side forearm handle | IFT-9274CHandR |
| Battery cell pack, Li-ION, for ES 4U/24-bay subsystems | IFT-9274CBT-C |
| 512MB DDR RAM DIMM module, for all EonStor subsystems | IFT-DDRESCM5 |
| 1GB DDR RAM DIMM module, for all EonStor subsystems | IFT-DDRESCMA |
| 2GB DDR RAM DIMM module, for all EonStor subsystems | IFT-DDRESCMB |

## Accessories

| Description | Part Number |
|---|---|
| Null modem, DB9 female to DB9 male, wires swapped | IFT-9011 |
| RS-232C serial cable, audio jack to DB9 (for A24F-G2224 single controller) | IFT-9270ASCab |
| Agilent Fibre Channel 2.125 / 1.0625 GBd Small Form Pluggable Optical Transceiver, LC, wave-length 850nm, multi-mode | IFT-9270CSFP2GA01 |
| Optical FC cable, LC-LC, MM-62.5/125, Duplex, LSZH, O.D.=1.8mmx2, 1 Meter | IFT-9270CFCCab01 |
| Optical FC cable, LC-LC, MM-62.5/125, Duplex, LSZH, O.D.=1.8mmx2, 5 Meters | IFT-9270CFCCab02 |
| Optical FC cable, LC-LC, MM-62.5/125, Duplex, LSZH, O.D.=1.8mmx2, 10 Meters | IFT-9270CFCCab03 |
| Dummy drive tray, Type-II bezel | IFT-9272CDTrayDmy |
| RS-232C serial cable and audio-jack-to-DB9 cable for UPS status monitoring | IFT-9270CUPSCab |
| Slide rails for 24" to 32" deep racks | IFT-9274Cslider32 |
| Slide rails for 24" to 36" deep racks | IFT-9274Cslider36 |

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